SECTION 1.0

Executive Summary

1.1 Introduction

This Application for Certification (AFC) for the South Bay Replacement Project (SBRP) project has been prepared by the LSP South Bay, LLC (LSP South Bay, the Applicant) in accordance with the California Energy Commission's (CEC) Power Plant Site Certification Regulations (August 2000). This Executive Summary provides an overview of the Project in accordance with Appendix B, Section (a) of the regulations.

This AFC has been prepared in accordance with CEC guidelines and provides:

- A detailed description of the proposed Project
- An assessment of the Project's likely impact on the existing environment
- Measures proposed by the Applicant to mitigate potentially significant, adverse environmental impacts of the Project, if any
- A discussion of compliance with applicable laws, ordinances, regulations, and standards (LORS)

Figure 1.1-1 shows the location of the Project within the project vicinity.

1.2 Project Overview

LSP South Bay proposes to develop the SBRP as a natural-gas-fired, combined-cycle power plant. The SBRP project will be configured as two natural-gas-fired combustion turbines and one steam turbine, and will have a nominal 500-megawatt (MW) output at 62 degrees Fahrenheit [°F]. SBRP includes duct firing which can raise the output up to an additional 120 MW by boosting the output of the steam turbine. The baseload operation has a net plant heat rate of 6,993 Btu/kwh (HHV).

The SBRP will be a replacement of the existing South Bay Power Plant (SBPP) that is owned by the San Diego Unified Port District (Port) and operated by the Applicant under a Lease and Cooperation agreement with the Port.[1] The proposed project site is immediately adjacent to and south of the existing SBPP in the City of Chula Vista adjacent to the San Diego Bay. The new SBRP project site is 12.9 acres and is part of what is referred to as the "former LNG site" because it is where San Diego Gas and Electric (SDG&E) operated a liquefied natural gas storage facility many years ago when it owned the power plant complex. The Applicant requires and is pursuing a new lease agreement with the Port to pursue this project.

[1] Technically, there are several agreements between the Port and LSP. These agreements include the Lease Agreement, the Cooperation Agreement, and various remediation agreements.

The scope of this Project includes site preparation and construction of the new power plant facility on 12.9 acres, the construction of new electrical system interconnection facilities on 6.5 acres (also on the former LNG site), and demolition of the existing SBPP which occupies 109 acres of Port property.[2] Natural gas for the facility will be delivered via approximately 3,700 feet of new 16-inch pipeline that will connect to SDG&E's existing 16-inch and 24-inch natural gas lines which supports the existing SBPP. The connection to these existing natural gas lines occurs within an existing SDG&E easement that parallels the west side of Bay Blvd. A new potable water connection and a new sewer connection will also serve SBRP.

The Project will provide a wide range of significant local and regional benefits. The Project is intended to provide sufficient reliable replacement power to the SDG&E system to allow for the removal of the Reliability Must Run (RMR) status of the existing SBPP. By doing so, the Project will allow the SBPP to be demolished and once-thru cooling to cease. Air cooled condensers will be used for the SBRP instead of once-through cooling. By removing the existing plant, and facilitating and advancing in time the relocation of the substation, it will allow 115 acres of the Chula Vista Bay Front to be put to new uses. The SBRP will make effective use of a brown field site (a state policy goal) and minimize the need for new laterals (pipelines, transmission lines, water and sewer lines) typically associated with a new power plant. It may also help to defer in time the need for Sunrise Powerlink transmission project, in affect serving as an insurance policy for this program should it be delayed. It will enable the local area to recycle a significant percentage of the costs of wholesale energy production back into the local economy.

SBRP will operate in an environmentally superior way when compared to feasible alternatives. Water resources will be conserved with the use of air cooling. The potential for marine biological impacts will be avoided since the once-through cooling will be eliminated. Land use benefits will accrue because the SBRP will use a 12.9 acre industrial zoned brown field site, and will free up the use of 115 acres, a net change of over 100 acres. At any given distance noise emissions from the new plant are lower than the existing plant. Visual resources are enhanced because the new plant is much smaller and more compact than the existing and sprawling SBPP complex. Air quality is protected because the inherently efficient design of the facility, the low emitting gas turbines, and the use of modern emissions control equipment. These measures will ensure that the SBRP will be able to produce energy much more efficiently that the existing plant, conserving natural gas and decreasing the release of air emissions into the atmosphere. The new SBRP will represent a continuation of an important trend of ever more efficient power production at South Bay.

Environmental benefits also will accrue by producing electricity locally versus importing the energy from outside the region. Because of transmission system losses, the effects of system congestion, and the lower efficiencies of power production in desert locations, fewer natural resources will be consumed to provide the same useable energy to the local area.

[2] The power plant property complex is 115 acres as it includes the SDG&E substation which occupies 6 acres. Sometimes for convenience sake the property is described as a 115 acre parcel.

1.3 Facility Location And Project Site Features

The SBRP site would be located near 990 Bay Blvd in Chula Vista, California. The portion of the parcel is located in Section 16, Township 18 South, Range 2 West (Imperial Beach 7.5-minute Quadrangle). Parcel numbers and the names of the landowners within 1,000 feet of the site and within 500 feet of the linear corridors are included in Appendix 1B.

The Project site is 12.9 acres in size for the SBRP, and 19.4 acres when including the proposed new substation facilities. It is property owned by the Port, and within the city boundaries of the City of Chula Vista, in San Diego County. It is immediately adjacent to and south of the SBPP. The 19.4 acres sits within a 33-acre site commonly referred to as the former Liquefied Natural Gas (LNG) site. SDG&E operated a LNG storage operation on the 33 acre parcel when it owned the power plant complex. Only two LNG storage tank foundations and overhead transmission lines remain on the property. The site is relatively flat, with a berm where the LNG storage tanks were located.

The project site is bound by the San Diego Bay on the west and Bay Boulevard and Interstate 5 (I-5) on the east. To the south is a salt production facility and to the north is the existing SBPP. The immediate area around the project site is industrial in nature, with some residential housing to the southeast and east (on the east side of I-5).

The Applicant and the Port are parties to a contract (the "Cooperation Agreement") that requires the Applicant to use commercially reasonable efforts to develop a replacement for the existing SBPP. In addition, and in conjunction with the filing of this AFC, the Port and the Applicant are in the process of finalizing a lease agreement for the SBRP site. The balance of the 33-acre site is dedicated to a 300-foot SDG&E utility easement on the east side and a planned 100-foot buffer on the bay side of the project site.

The new SDG&E substation (6.5 acres) will replace entirely the existing South Bay substation pursuant to an agreement between SDG&E and the City of Chula Vista as well as future interconnection agreements between SDG&E and the Applicant. The SBRP will interconnect with this new substation at three voltages (69 kV, 138 kV and 230 kV) as soon as the new substation becomes operational. In the event that the new substation will not be operational in time for initial operation of the SBRP, the SBRP will interconnect on an interim basis at 69 kV and 138 kV at the existing substation and will construct a 230 kV substation on site that will become part of the new substation when it is completed. This interim interconnection configuration is identified herein as the "interim interconnection" to distinguish it from the "final interconnection" configuration that will exist once the new substation is completed and in operation. The new substation (including all 3 voltages) is appropriately considered part of the SBRP project and has been reviewed as such in this AFC.

The project also includes the demolition of the existing SBPP plant, which is currently in operation.

1.4 Project Components and Phases

The SBRP will have the following physical components:

- A 620-megawatt (MW) net combined-cycle generating facility configured using two natural-gas-fired combustion turbine generators (CTGs) and one steam turbine generator (STG)
- Approximately 400 feet of new 230-kV transmission line connecting to the new 230 kV transmission lines owned by SDG&E and a new 230 kV substation for the interim and final electrical interconnection.
- Approximately 2,700 feet of new underground 69 and 2,400 feet of new underground 138 kV transmission lines connecting to the existing SDG&E substation located on the SBPP site for the interim electrical interconnection.
- A relocated SDG&E South Bay Substation occupying 6.5 acres adjacent to the SBRP.
- The final interconnection to the SDG&E's new substation located on the southern portion of the project site would require approximately 600 feet of underground 69 kV and 900 feet of underground 138 transmission lines.
- Approximately 3,700 feet of new 16-inch-diameter natural gas pipeline.
- Approximately 400 feet of new potable water and sanitary sewer lines.

Figure 1.1-1 shows the location of the Project within the project vicinity. Figure 1.4-1 shows the Project site and proposed routes for the gas line, electrical interconnections, potable water line, and sewer line. A photograph showing the appearance of the site prior to construction is presented as Figure 1.4-2. An artist's rendering of the SBRP and transmission lines after construction is presented as Figure 1.4-3.

As part of the plan to ensure uninterrupted electrical supply in the import-dependent San Diego area, and consistent with local communities' interest in modernizing the power plant complex area, the SBRP project construction will consist of three phases:

- **The Construction Phase —** The first phase is the demolition of existing structures and foundations associated with the former Liquefied Natural Gas (LNG) Facility, preparation of construction lay down areas, and the construction of the SBRP. Initial operations of SBRP will include an interim interconnection to the SDG&E transmission system through a new 230kVA substation on approximately.6 acres and interconnecting to SDG&E's planned new 230 kV transmission line along with an underground interconnection to the existing SDG&E South Bay 138/69kV substation.[3]
- **The Demolition Phase —** The second phase of project construction activities will occur after the SBRP achieves commercial operation. The construction activity during this

[3] San Diego Gas & Electric Company (SDG&E) was granted a Certificate of Public Convenience and Necessity (CPCN) for the Otay Mesa Power Purchase Agreement (OMPPA) Transmission Project. The CPCN is for the construction of two new 230 kilovolt (kV) electric transmission circuits to connect SDG&E's Miguel Substation with both the Sycamore Canyon Substation and the Old Town Substation in San Diego County. The circuit to the Old Town Substation is planned to pass within approximately 100 feet of the proposed SBRP. This project is under construction. The SBRP interconnection plan is based in part on interconnecting to this circuit.

phase will be the demolition of the existing SBPP facilities, excluding SDG&E's existing South Bay Substation which will remain in service until the new substation is constructed.

- **The New Substation Phase** — The final phase of project will involve the construction of the SDG&E substation on approximately 6.5 acres south of and adjacent to the SBRP site. This construction will be performed after the start up of the SBRP and demolition of SBPP. After the new SDG&E substation construction is completed and operational, and the SBRP generator leads are attached to the new facilities, SDG&E could then initiate demolition activities on the South Bay Substation, located north of the SBRP project site. These demolition activities, however, are not part of the scope of this AFC. They are part of a separate project of unknown timing and scope.

The interim facilities are proposed to ensure that SBRP can meet the commercial operations date of 2010. At the same time, and while the Applicant is proposing this interim electrical interconnection step, nothing in this AFC precludes eliminating this step and instead relying entirely on the final substation facilities, assuming they are placed in service in time to support the commercial operations of SBRP.

1.5 Project Ownership

The Applicant — LSP South Bay, LLC — is a wholly owned subsidiary of LS Power. LS Power is a fully integrated development, investment and asset management group of companies focused on the power industry, with eleven power generation projects totaling approximately 7,600 MW of generation capacity located in various markets across the U.S.

The Applicant will own the SBRP and associated transmission lines to the point of interconnection. As is consistent with SDG&E practice and CPUC law and regulation, the new natural gas pipeline constructed to serve the facility would be owned by SDG&E. The potable water line would be owned by Sweetwater Authority, the local water purveyor for the City of Chula Vista.

The Applicant is a wholesale power producer. As such, it requires a counter party who will purchase the electrical output and services produced by SBRP. The most likely counter party is SDG&E, the company primarily responsible for the retail delivering of energy to the thousands of homes and business throughout the area. In addition to SDG&E, there are other energy providers that serve customers in San Diego through what is commonly referred to as "direct access". There is also a California program called "Community Choice Aggregation" or CCA which is being implemented so as to allow cities to arrange wholesale power purchases for their residents and businesses. Either individually or collectively, these load serving entities – SDG&E, direct access providers, and CCA providers — provide the market for power from the SBRP.

1.6 Project Schedule

The Applicant is filing this AFC under the CEC's 12-month licensing process. Figure 1.6-1 depicts the anticipated schedule for permitting, procurement, construction and start-up/commissioning for SBRP, and the demolition of the existing SBPP. Construction

activities will begin immediately after: 1) obtaining the CEC license and any other necessary permits; 2) executing power purchase agreements with credit worthy retail provider; and 3) completing project financing. It is assumed that the 230kV circuit that is under construction by SDG&E as part of the Otay Mesa 230kV transmission improvement program is completed. Initial site preparation and demolition activities (of old foundations on the former LNG site), and construction activities are expected to take approximately 28 months. The demolition of the existing SBPP will immediately follow after SBRP commences commercial operation. Demolition is expected to take 25 months. Based on this schedule and as shown in Figure 1.6-1, pre-operational testing is expected to commence in the second quarter of 2009, commercial operation is expected to commence second quarter 2010, and demolition of the existing SBPP will commence in the third quarter of 2010.

1.7 Roles and Responsibilities

Table 1.7-1 provides an explanation of the activities associated with each of the Project phases, the roles and responsibilities for these activities, and the number of acres associated with each.

TABLE 1.7-1
Activities by Project Phase

Phase	Activity	Is this activity included in the scope of the AFC	Who carries out these activities?	Who operates and/or maintains these facilities?	Property Lessee	Property Leasor	Acres Impacted
Construction Phase	Clear and grade portions of the 33-acre former LNG site	Yes	LSP South Bay LLC, (Applicant)	Applicant	Applicant	San Diego Unified Port District (Port)	~ 20 acres
	Establish temporary lay down and parking areas on former LNG site and the existing SBPP property	Yes	Applicant	Applicant	Applicant	Port	~ 7.0 acres on the former LNG site ~ 13.0 acres on the existing power plant property
	Construct new SBRP	Yes	Applicant	Applicant	Applicant	Port	12.9 acres
	Construct interim 230 kV facilities	Yes	SDG&E	SDG&E	SDG&E[4]	Port	0.6 acres
Demolition Phase	Demolish the existing SBPP	Yes	Applicant	NA	Applicant	Port	109 acres
	Develop the landscaping zone immediately north of the 33-acre site	Yes	Applicant	Port	n/a	n/a	~ 100 feet x 600 ft area = 1.5 acres

[4] SDG&E is identified as a lessee of the Port in this table only as a matter of convenience. The nature of the any agreements between SDG&E, the Port and the City of Chula Vista regarding a future substation site are unknown.

TABLE 1.7-1
Activities by Project Phase

Phase	Activity	Is this activity included in the scope of the AFC	Who carries out these activities?	Who operates and/or maintains these facilities?	Property Lessee	Property Leasor	Acres Impacted
Final Interconnection Phase	Construct the final 69-138 kV interconnection facilities along side the 230 kV facilities constructed during interim phase	Yes	SDG&E	SDG&E	SDG&E	Port	6.5 acres total for substation in final configuration
Future Project	Demolish the existing 69-138 kV substation	No	SDG&E	SDG&E	SDG&E	Port	~ 6.0 acres

1.8 Project Objectives

The objectives of the for the SBRP project include:

1. Commercially-viable and capable of supplying economical electrical services — capacity, reliability, ancillary services, and energy supply — to the San Diego Region.
2. Capable of ensuring the timely removal of the existing South Bay Power Plant and that fulfills the obligation found in Article 7.1.a of the Cooperation agreement.[5]
3. Meets applicable laws, ordinances, regulations and standards (LORS) of the California Energy Commission, Chula Vista, the Unified Port of San Diego and other agencies, and complies with The Applicant's Environmental Policy.
4. Consistent with the objectives, guidelines and timing goals of the emerging Bay Front Master Plan.
5. Assists in maintaining and/or increasing the regional electrical system's efficiency and reliability.
6. Does not conflict with the state-mandated 20 percent Renewable Portfolio Standard (RPS) requirements for renewable energy.

[5] Article 7.1.a of the Cooperation agreement reads "use commercially reasonable efforts to develop, finance, construct and place into commercial operation a new generation plant replacing the South Bay Power Plant… which shall have a generating capability at lease sufficient to cause the ISO to terminate (or fail to renew) the must run designation application to the South Bay Power Plant on or before the termination of the lease".

1.9 Operations of the existing South Bay Power Plant (SBPP)

The existing SBPP continues to provide valuable electrical services to the region. The need for these services is recognized by the California Independent System Operation (CAISO) with its 2006 designation of SBPP Units 1-5 as Reliability Must Run (RMR) resources under a Condition 2 contract, meaning that the SBPP generating units can operate only under CAISO dispatch orders. CAISO dispatches the SBPP for a variety of reasons related to maintaining stability of the grid and alleviating congestion that occurs at various locations on the grid. As a result of CAISO dispatch instructions, the SBPP produced an average of around 1,800 gigawatt-hours (GWh) per year during 2004 and 2005, achieving a capacity factor of 30 percent.

The services of the SBPP will continue indefinitely until there are changes to the regional energy power plant and transmission system and CAISO removes the RMR status for SBPP. The future operating characteristics of SBPP will depend on a number of factors, including regional energy use, new generation, and transmission. The Otay Mesa Power Plant, the Otay Mesa 230kV transmission circuit, and the Silvergate and Main substation projects may all have an effect on how SBPP is dispatched. These projects have all received regulatory approval, but they are at various stages in their development. However, and of significant importance locally, even when these projects are complete, several additional changes to the local transmission and distribution system are necessary before the SBPP could be removed from service.[6]

First, because the SBPP provides reliability services, in order to permanently retire SBPP, the system will need to have enough local generation or transmission line capacity from outside the region to ensure that there is enough electrical system capacity available in case certain emergency conditions arise. LSP's SBRP is an effective way to provide this capacity.

Secondly, the SBPP is electrically interconnected to eleven power lines that feed local substations — five 138kV lines and six 69kV lines. The existence of the Otay Mesa transmission line and Otay Mesa power plant will not be sufficient to replace the services provided by the SBPP without additional reconfiguration and alteration of the local transmission system and substation. Some of these alterations could be very significant and could involve the retention of some level of generating capacity at SBPP indefinitely.[7]

1.10 Regional Energy Needs Met by the New SBRP

The SBRP will allow SDG&E and/or other load serving entities (LSEs) to acquire economically attractive energy (MWh), generation capacity (MW), and ancillary electrical services (e.g., VAR support8) to serve the reliability and basic energy needs of the local area at an electrically important location. The CEC identified San Diego's need for energy and capacity resources in its most recent Integrated Energy Policy Report (IEPR), which was

6 The capacity factor of SBPP will also be affected by the operations of the Palomar facility, which recently came on line.
7 The considerations discussed here result from physical constraints on the power generating and delivery system within the region. The RMR designations are important, but do not change the underlying nature of these real physical requirements. It is likely that the RMR program will change in the future as regulations evolve, but given the important location of South Bay on the electrical system, any program that replaces the existing RMR contracts could be expected to continue to recognize the locational value of generation located near where the energy is used.

8 VAR refers to reactive volt-amperes. It is a measure of the energy exchanged between electric and magnetic fields in a circuit. Inductive loads effect the VARS that the system requires.

adopted in November 2005.[9] The evaluation of services that SBRP could provide is based on conservative assumptions about load growth, the availability of other substitute resources (whether transmission or generation), and the development of important demand-side, efficiency and renewable energy resources. Whether these electrical services are provided by SBRP will depend in part on the overall economics of SBRP relative to the alternatives, which may include consideration of the value to the local economy of generation located in the San Diego area. These energy services – reliability, capacity, basic energy supply and ancillary services — are described at the end of this Section.

1.11 Key Project Benefits

The SBRP results in the redevelopment of an existing "brown field" industrial site and replaces aging power generation equipment with a modern and efficient power plant. Additional benefits include:

- Provides economical energy, capacity and local grid reliability services to the region.
- Facilitates decommissioning and removal of the existing SBPP.
- Creates 115 acres of bay front property for new development.
- Eliminates the use of bay water for once-through cooling and eliminates concerns about marine biology impacts.
- Advances the goals of the Chula Vista and SDG&E Memorandum of Understanding (MOU) relating to the new substation and certain overhead power lines (see Appendix 1A).
- Reduces dependence on older and less efficient in basin (and remote) power generating plants.
- Re-uses sensitive land, electrical transmission, gas, water and sewer infrastructure.
- Improve the efficiency of use of environmental resources:
  - Less land is required.
  - Less potable water.
  - No use of bay water.
  - Air emissions are reduced.
  - Noise emissions are less.
  - The visual aesthetics of the area is greatly improved.
- Recycles costs of securing energy back into the local community.
- Provides an "insurance policy" for delays in other transmission and generation projects.
- Reduces electrical system losses that otherwise occur when energy is imported into the region.

9 "Transmittal of 2005 Energy Report Range of Need and Policy Recommendations to the California Public Utilities Commission" (IEPR Transmittal Report), CEC-100-2005-008-CMF, November 2005.

- Decreases import congestion by "unloading" some of the congested power lines that currently supply power to the region.
- Reduces the need for major local sub-transmission system changes, if there is no generation at South Bay.
- Avoids the siting of additional peaking power plants in the region.
- Brings high quality industrial development to the region, and support the Chula Vista Bay Front Master Plan.

1.12 SBRP Supported in State Policy on Aging Plant Replacement and Brownfield Development

The idea of replacing aging generating facilities and supporting brown field development of new power plants has wide support in California. In its 2004 update to the 2003 Integrated Energy Policy Report (IEPR), the CEC investigated the role of aging plants like SBPP and Encina and the risks associated with their continued operation. The CEC concluded that although aging plants currently play a crucial role in the reliable operation of California's electrical system, there is a need to address the risks associated with relying on their continued operation. In its 2005 Integrated Energy Policy Report, the CEC reiterated the need to consider these risks, and recommended that the CPUC consider these issues in its 2006 resource procurement proceeding.

While the CPUC is expected to address aging plants in its determination of need for the 2006 resource procurement proceeding (R.06-02-013), the CPUC has also previously expressed a preference for the development of brown field plants (i.e., existing power plant sites), directing the IOUs [e.g. SDG&E] "to consider the use of brown field sites first and take full advantage of their location before they consider building new generation on greenfield sites. If IOUs decide not to use brown field, they must make a showing that justifies their decision."[10]

Finally, the California state legislature and Governor Schwarzenegger have expressed support for power plant replacement or repowering with passage of AB 1576 in 2005, which provides that contracts for such projects will be recoverable in rates. Specifically, the bill states:

> (e) Because of their strategic location and existing infrastructure, it is in the best interest of the state to encourage the replacement or repowering of these [aging] facilities.
>
> (f) Investment in replacement or repowered electric generating facilities replaces our aging facilities with more efficient and cost-effective facilities that enhance environmental quality and provide economic benefits to the communities in which they are located.
>
> (g) Therefore, it is in the public interest for the state to facilitate investment in the replacement or repowering of older, less-efficient electric generating facilities in order to improve local area reliability and enhance the environmental performance, reliability, efficiency, and cost-effectiveness of these facilities.

[10] D. 04-12-048, p. 159.

(h) An effective means for facilitating that investment, while ensuring adequate ratepayer protection, is to authorize electrical corporations to enter into long-term contracts for the electricity generated from these facilities on a cost-of-service basis.

As such, replacement of the existing SBPP with the proposed SBRP fulfills the clearly stated policy objectives of the State of California.

1.13 Project Alternatives

A "No Project" alternative was considered and rejected. The no project alternative fails to meet the basic project objectives as described in this AFC (see Section 9.0 – Alternatives). In addition, the "No Project" alternative could result in less fuel efficiency and greater air emissions because older, less-efficient plants with higher air emissions might be used to generate power instead of being replaced with cleaner, more-efficient plants such as the SBRP. In addition, the SBRP would produce power in an area of San Diego County that has a need for increased grid reliability and reducing dependence on imported power to serve the region's needs.

One basic objective of the project is to increase the reliability of the electrical system in southern and western portion of San Diego sufficient to facilitate the removal of the Reliability Must Run status of the existing SBPP project. This would allow the Applicant to remove the SBPP in conformance with the Cooperation Agreement between the Applicant and the Port.

No alternative water supply would avoid or minimize any potential significant effects, given the proximity of the supplies already serving the existing project and the fact that the SBRP project is air cooled and water consumption in minimal relative to the existing SBPP's once-through-cooling system.

Several alternative generating technologies were reviewed in a process that led to the selection of a modern, proven, combustion turbine combined-cycle arrangement for project using natural gas for fuel. The alternative technologies reviewed in the AFC include conventional oil and natural-gas-fired plants, simple-cycle combustion turbines, biomass-fired plants, waste-to-energy plants, solar plants, wind-generation plants, and others. None of these technologies are feasible alternatives to the combined-cycle technology selected for SBRP. A complete discussion of project alternatives is presented in Section 9.0 - Alternatives.

Alternative sites were also evaluated at different times during the past six years of development work. One South County site was considered a potential feasible location, but it was sold to another party for development unrelated to power production. In addition, the applicant reviewed 28 other sites that had some degree of merit that warranted further investigation. The Applicant also evaluated two additional sites at the behest of SDG&E in the northern portion of San Diego County. Significant flaws were found with all of these sites. A discussion of the alternative site investigations is found in Section 9.0 -Alternatives.

1.14 Environmental Considerations

Sixteen areas of possible environmental impact from the proposed project are analyzed in this AFC. Detailed descriptions and analyses of these areas are presented in Subsections 8.1

through 8.16 of this AFC. With the implementation of reasonable and feasible engineering design measures, there will be no significant environmental effects. The potential effects of some key areas typically of greater interest to CEC staff and the public are summarized briefly in this section.

1.14.1 Elimination of Once-Thru Cooling

The existing steam plant (SBPP) that will be replaced by the proposed SBRP project is over 40 years old. Significantly, this vintage project uses a once-through cooling system, drawing waters from the San Diego Bay. In 2003 and 2004, and as part of the community stakeholder process, the Applicant agreed to consider converting the once-through cooling system to an alternative cooling system for any new project so as to alleviate concerns about the potential for marine biological impacts.

In proposing a project that eliminates once-through cooling, the Applicant is honoring commitments to the community made during the stakeholder process. It is also reflective of the Applicant using sound engineering and business judgment in that the decision takes into account the practicality of a new or significantly modified once through cooling system at the South Bay site compared to alternatives. This decision is highly site specific to South Bay, and is in direct relationship to there being a feasible alternative at the project site, namely air cooling.

1.14.2 Water Resources

The SBRP completely eliminates the existing once-through cooling system and the use of San Diego Bay water in favor of the air-cooled condenser (ACC) cooling system. The new power plant will use a maximum of 129 acre-feet per year of water for process and domestic water needs. Discharge of water will also be minimal. Potable water for drinking, safety showers, fire protection, service water, and sanitary uses will be served from the local potable water system. Sanitary wastewater will be disposed via the City of Chula Vista's sanitary sewer system. A new six inch in diameter sewer line connection will be added to connect to the City's system about 400 feet away.

1.14.3 Air Quality

The site is located in an area designated as nonattainment for State and Federal ozone air quality standards, and for State respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) standards. An assessment of the project's impact to air quality was performed using detailed air dispersion modeling. The potential air impacts from the Project would be mitigated by the installation and operation of Best Available Control Technology (BACT) for the combustion turbines and heat recovery steam generators. Emission reductions would be generated from the shutdown of the existing SBPP in sufficient quantities to satisfy San Diego County Air Pollution Control District requirements, and to ensure that there is no net increase in emissions of ozone precursors or PM_{10} (or $PM_{2.5}$) precursors. The combination of the detailed air quality modeling analyses and these mitigation measures would result in the project having no significant adverse impact on air quality. See Subsection 8.1, Air Quality, for a detailed analysis.

1.14.4 Visual Resources

Visual resources are protected and conserved with the proposed SBRP design. With the development of the SBRP, the removal of the existing SBPP is possible, which would reduce visual impacts at key observation points significantly. The existing SBPP has an aged appearance and uses steam generation technology, which is characterized by tall prominent steel boiler structures (160 to 180 feet tall structures). The facility, built in the 1960s, was constructed with minimal screening for views from the City of Chula Vista and Imperial Beach. Therefore, demolition of the existing facility would improve the aesthetic environment in the South Bay area.

The new Project will be smaller in height and massing. The most prominent features of the SBRP would be the exhaust stacks and the air cooled condenser, which are approximately 125 and 94 feet tall, respectively. It will be compact and be enclosed. Architectural screening techniques are proposed. The Project will allow for the removal of the existing SBPP and all its associated support buildings, tanks, piling and other structures, thereby allowing this 115-acre parcel to be put to alternative uses that are aesthetically more desirable. SBRP will include protections for the water's edge, appropriate lighting to minimize the potential for disturbances to fauna, a high quality industrial design treatment, and pleasant landscaping areas.

1.14.5 Summary of Improved Uses of Environmental Resources

The SBRP will be much more efficient in its use of environmental resources than the existing SBPP. Table 1.14-1 describes these differences.

TABLE 1.14-1
Improved Use of Environmental Resources

Parameter	New SBRP	Existing South Bay Power Plant (SBPP)
Land (acres)	Power plant (and substation) will be laid out in a compact fashion on the former LNG site on a fraction of current plant site size. 12.9 acres are required for the new SBRP. SBRP will make use of an existing brownfield site. No new significant linear facilities are required (e.g. transmission, natural gas, water, sewer).	Existing power plant (and substation) occupies 115 acres and it sprawls and bisects the bay front.
Potable Water (acre-feet per year)	129 (Maximum Use)	224 (Historic Average Use)
Bay Water (million gallons/day)	None	600 mil g/day maximum. (Current Permit Limit)
Air Emissions – Precursors to Ozone (lbs/MW-hr)[a]	0.077	0.18
Air Emissions – Precursors to PM (lbs/MW-hr) [a]	0.11	0.27
Air Emissions - Greenhouse Gases (CO_2) (lbs/MW-hr) [a, b]	769	1,319

TABLE 1.14-1
Improved Use of Environmental Resources

Parameter	New SBRP	Existing South Bay Power Plant (SBPP)
Maximum Natural Gas Use (million standard ft^3/day)	112	177
Heat Rate (BTU/KW-hr, net, HHV)	7,000	10,000 – 12,000, depending on unit
Lighting	SBRP will be designed to meet modern night time lighting requirements	Existing SBPP reflects requirements that are dated.
Noise	At any given distance SBRP will lower emitting	Existing SBPP reflects requirements that are dated.
Visual Design	SBRP will be designed as a much more compact facility; it will have enclosures and architectural elements; attractive landscaping areas will be created.	Existing SBPP reflects dated requirements that were less sensitive to visual design considerations.

Notes:

[a] Compares the SBRP emissions with the SBPP historical average for 2004-05.

[b] Natural gas combustion in gas turbines produces 110 lbs CO_2 per MMBtu (USEPA, 2000). USEPA. *Compilation of Air Pollutant Emission Factors (AP-42),* Volume 1 – Stationary Point and Area Sources, Section 3.1 – Stationary Gas Turbines, Table 3.1-1, April 2000.

1.14.6 Protecting Local Air Quality and Public Health

Air quality is of special concern to the local community and this section provides some additional information about the approach the Applicant used in ensuring that public health is protect with the new project. Air Quality will be protected and emissions reduced with the proposed SBRP design by respecting certain principles that can be organized as follows: (a) balance the numerous factors that impact the facility's design and affect air quality; (b) use highly conservative assumptions throughout the modeling analysis that evaluates air quality impacts; and (c) apply a design goal of ensuring that the future annual power plant emissions will not exceed the actual historical levels for precursors of ozone and particulate formation, (general measures most important to public health).

First, the Applicant is proposing a project that balances numerous factors – all the requirements of local permitting, the extensive energy needs of the region, the acreage of the proposed site, the needs of the adjacent substation, the high degree of effectiveness of modern air pollution control systems and certain building and fire code requirements.[11]

Secondly, the design is predicated on using extremely conservative (meaning protective of public health)[12] assumptions. The assumptions include using maximum allowable emission rates, worst-case operating schedules, and worst-case meteorological conditions, in

[11] For example, diesel fire pumps are required for fire protection and to meet current building code requirements. The operation of these fire pumps for about 50 hours per year contributes to the new facility's emissions This is just an example of the rigor that goes into the emissions computations and resulting estimates of air quality impacts of the Project.

[12] The health risk modeling conducted for the Project (see Section 8.6 – Public Health) is based on a person being located at the same location, 24-hours per day, 365 days per year for 70 years. Clearly, this is not realistic; however, even in the unrealistic theorized situation, the analysis shows that the person's health risk from the Project will be less than significant.

combination with the worst-observed existing air quality– even when all of these situations could not physically occur at the same time.

Third and lastly, the SBRP design imposed as a constraint the following condition: meet all necessary air quality requirements and achieve reasonable operating flexibility while ensuring that the new facility would not exceed the annual emissions of the existing SBPP. This would ensure that the new facility will continue the trend of continuous improvement in air emissions from local power production at South Bay.

The improving performance of the SBPP can be illustrated quantitatively with Figure 1.14-1, which shows the reduction in emissions of NO_x, ozone precursors (NO_x and VOCs), and PM_{10} precursors (ozone precursors plus SO_x and PM_{10}) over time. The general decrease in emissions from SBPP over the last 25 years can be attributed to the reduced combustion of fuel oil and installation of air pollution control systems. Most recently, Selective Catalytic Reduction (SCR) systems were installed to reduce NO_x emissions from the four boiler units according to the following schedule:

- Unit 1: December 1996
- Unit 2: December 2000
- Unit 3: March 2001
- Unit 4: December 2001

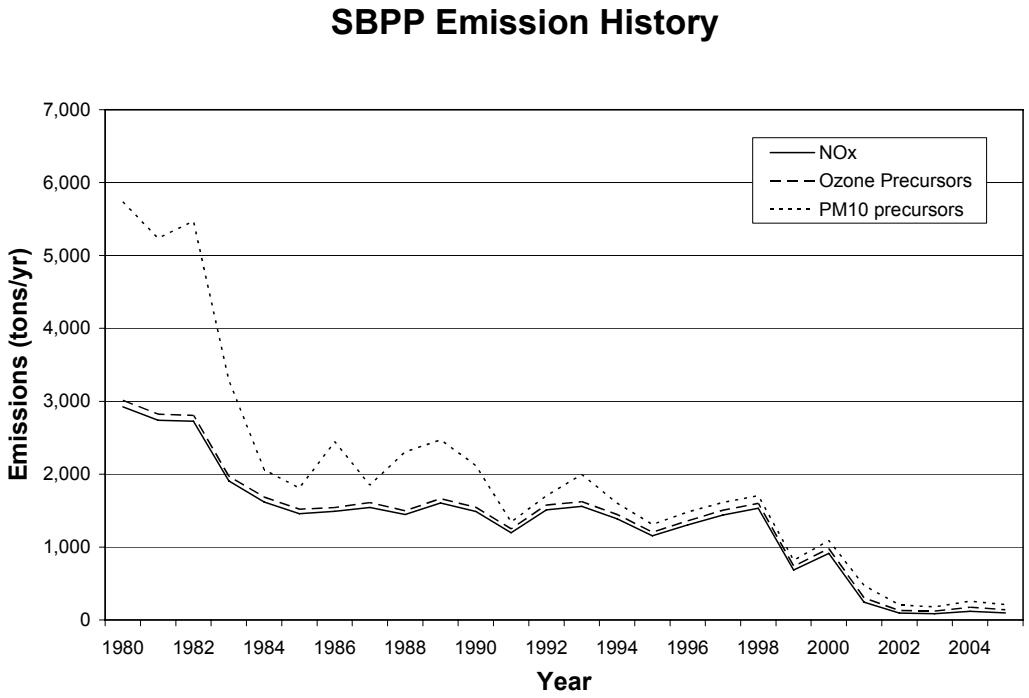

FIGURE 1.14-1
Trend of Continuous Improvement in Emissions at SBPP

Emissions were reduced while maintaining the ability of the SBPP to provide a constant, dependable electric power supply to the San Diego region. The resulting improvement in

emission efficiency can be seen in Figure 1.14-2 for ozone precursors and PM-10 precursors. Emission efficiency is expressed in terms of the amount of emissions in pounds per electric energy output in megawatt-hours (MW-hr).

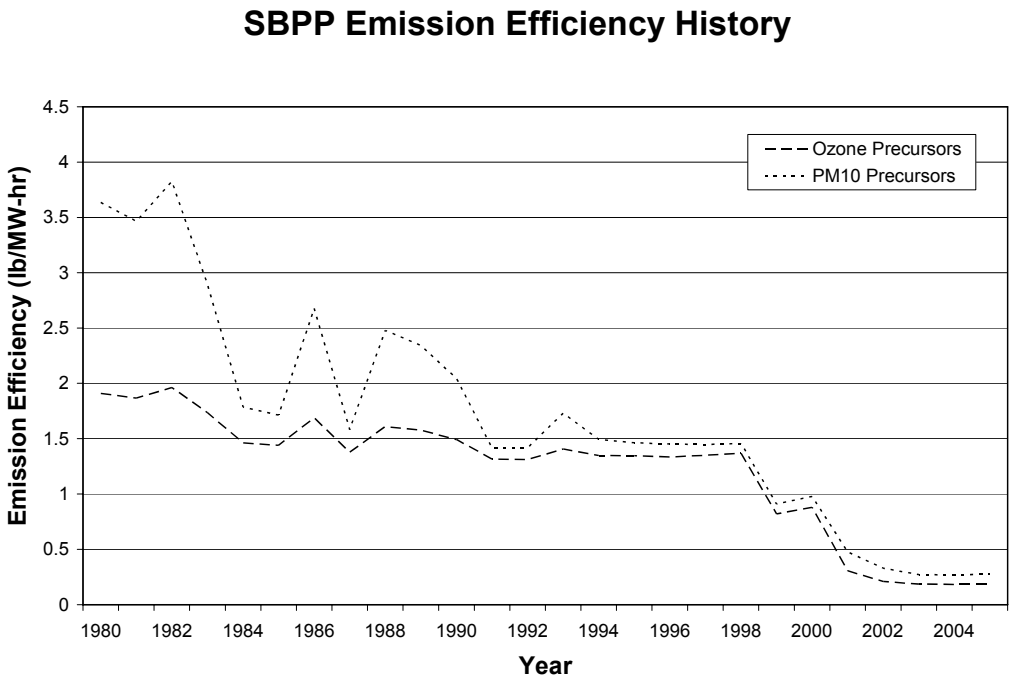

FIGURE 1.14-2
SBPP Emissions Efficiency Trend

Even with the emission efficiency improvement seen in Figure 1.14-2 for the SBPP, the SBRP will provide another substantial improvement in efficiency as seen in Table 1.14-2.

TABLE 1.14-2
SBPP vs. SBRP Emissions Efficiency Comparison

Emitted Pollutant	SBPP (lbs/MWh)*	SBRP (lbs/MWh)
Ozone Precursors	0.18	0.077
PM_{10} Precursors	0.27	0.11
CO_2 (Greenhouse Gas)	1,319	769

* pounds per Megawatt hours

As documented in the Section 8.1 -Air Quality, SBRP – using highly conservative assumptions – will produce no higher mass emissions than the existing SBPP while at the same time producing approximately 2.2 times as much energy.[13]

[13] For this comparison the SBRP is assumed to produce approximately 3.7 million MW-hrs of energy, versus the recent (2004-05) historical average for SBPP of 1.7 million MW-hrs of energy.

The air quality benefits derive from the use of state-of-the-art air pollution control systems. These include dry-low oxides of nitrogen (NO_x) combustors on the combustion turbines that will reduce emissions of NO_x, while maintaining low levels of carbon monoxide (CO) and volatile organic compounds (VOC). In addition, the project design includes the addition of a Selective Catalytic Reduction (SCR) system to further reduce NO_x emissions and an oxidation catalyst system to reduce CO emissions. The only fuel being proposed for the SBRP is clean burning natural gas, so emissions of particulate matter and oxides of sulfur will be low.

The analysis of potential public health effects is strongly tied to the air quality impact analysis discussed above. Non-criteria pollutant emissions are quantified from the proposed natural gas-fueled gas turbines and auxiliary boiler, and the Diesel-fueled emergency fire water pump engine. Air dispersion modeling is used with these emissions to compute maximum potential ground-level concentrations. These maximum concentrations are subject to a screening health risk assessment (SHRA) to derive potential maximum individual carcinogenic risk (MIR) and non-carcinogenic chronic and acute health hazards. The MIR of the Project is well below 10 in one million, the significance level established by the SDAPCD, USEPA and other air pollution control agencies. The potential maximum chronic and acute health hazard indices are both well below 1.0, their respective levels of significance. Hence, the SBRP would result in no significant health impacts.

1.15 Energy Production "Meeting Regional Energy Needs"

This section describes the energy needs that the SBRP can meet. Figure 1.15-1 shows that a reliability deficit starts in 2010 and grows to approximately 1,400 MW by 2016. As a result of this shortfall, the SBPP will not be able to be removed from service without the addition of replacement generation such as the proposed SBRP or new transmission lines. If the SBPP is replaced with the more efficient SBRP, costs of providing the reliability services would be reduced.

In addition to improving local reliability, SBRP also contributes to overall "resource adequacy." A capacity reserve margin is used to ensure that there are adequate resources available to meet the system's peak load requirements. In California, the reserve margin requirement is set at 15 percent to 17 percent above the expected peak demand for each load serving entity and regulatory structures are being put in place to ensure that the reserve margin requirements are met and that compliance is demonstrated. Recognizing the need for resources to be deliverable to load, the CPUC is also in the process of establishing a local capacity requirement for transmission constrained areas.

Figure 1.15-2 below shows the physical resources in the San Diego area that would be available to meet the peak demand reserve requirement in 2015. The proposed SBRP will provide a much needed contribution to the total capacity SDG&E requires.[14]

[14] Note that the year 2015 is chosen as a matter of convenience. This result is not appreciably different in terms of in-region resources for any year from 2010 to 2015. The total capacity requirement for the region of course changes (grows). The capacity requirement for 2010 is approximately 7 percent less than the requirement shown for 2015 above.

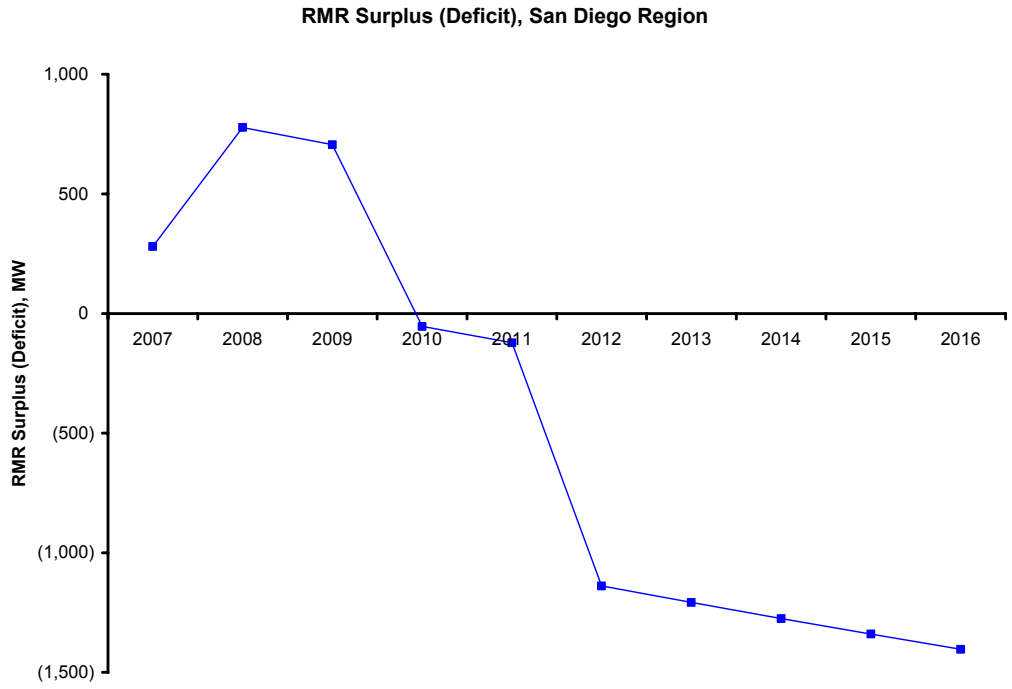

FIGURE 1.15-1
San Diego RMR Surplus (Deficit) Assuming SBPP and Encina Retirement

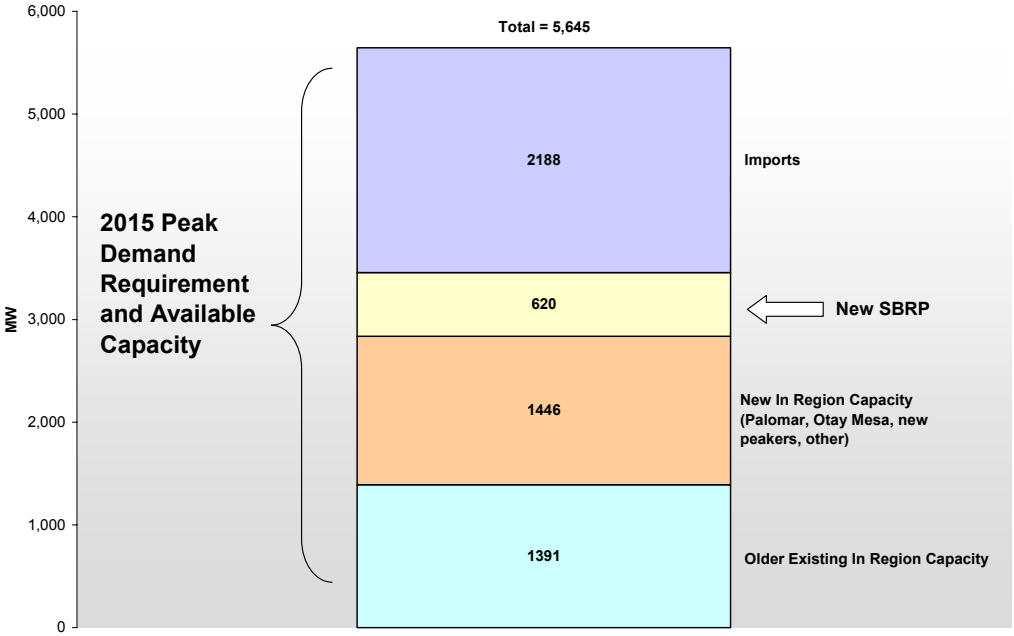

FIGURE 1.15-2
Contribution of In-Area Resources to Meeting Capacity Requirement

SBRP can also provide basic energy supply to the region.[15] Figure 1.15-3 shows the balance of energy loads and resources for the San Diego area *as a whole;* the region's requirements are larger than those supplied by SDG&E because of Direct Access customers. The chart shows the total projected supply requirement from 2009 through 2016 and considers the total amount of energy supply that has been already secured by San Diego area LSE's through long term contracts as reported in the 2005 IEPR.[16] The chart also assumes that additional renewable resources are added to meet the 20 percent renewable portfolio standard (RPS) by 2010. In this way, the remaining energy supply gap can be seen even after accounting for all hypothetical (but anticipated and required) renewable energy resources. By showing the energy gap this way, it is clear that the energy from the SBRP does not crowd out the required 20 percent renewable energy supply, nor does it limit the amount of renewable energy supply to 20 percent.[17]

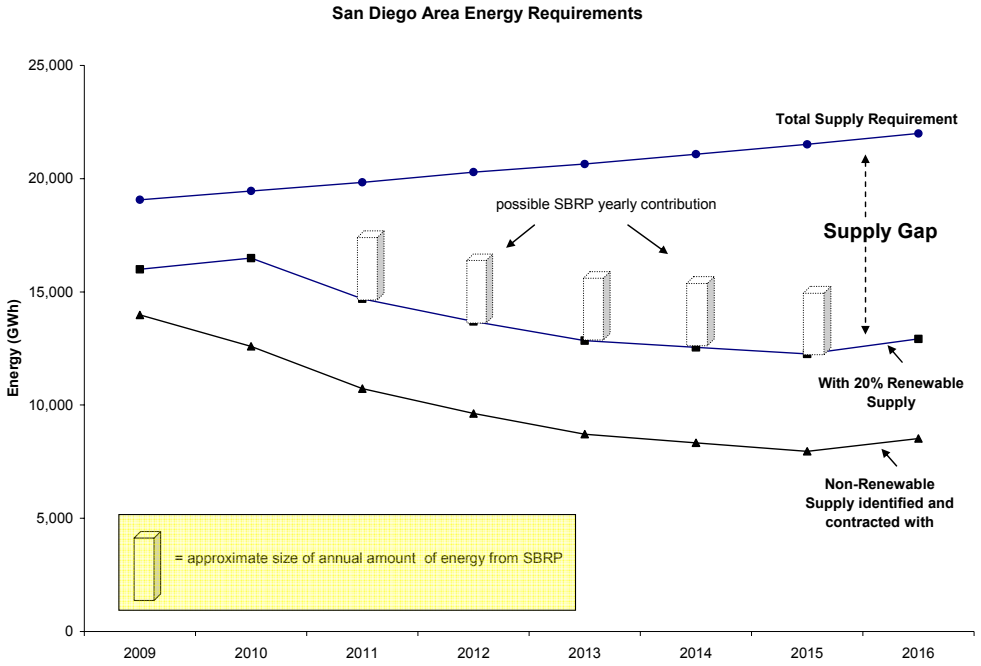

FIGURE 1.15-3
Contribution of SBRP to Meeting San Diego Energy Supply Requirements (Assumes SBRP at an 80 percent capacity factor)

15 The distinction between energy supply and capacity is the difference between total energy requirements measured over a period of time (typically a year) versus the system's peak requirements at any one time (e.g. typical hot "peak" load condition day).
16 CEC, Resource Plan Aggregated Data Results, Revised Staff Report, November 2005, Table 31, p. 44.
17 The 500 MW SBRP is assumed to provide about 3,700 GW-hrs of energy, which represents a reasonably high capacity factor.

In addition to local reliability, resource adequacy and energy supply services, SBRP can also provide ancillary services. These services include: (i) Regulation, (ii) Spinning Reserve, (iii) Non-Spinning Reserve, (iv) Replacement Reserve, and (v) Voltage Support.

1.16 Persons Who Prepared the AFC

Persons with primary responsibility for the preparation of each section of this AFC are listed in Appendix 1C.

1.17 Laws, Ordinances, Regulations, and Standards (LORS)

Each section addresses the relevant LORS and addresses compliance with them.

1.18 Permitting Requirements

Each section provides a list of applicable federal, state, and local permits that are required, but for the CEC's exclusive siting jurisdiction. Section 8.4-Land Use provides overall guidance for the relationship of the Project to the land use authorities and requirements of the Port, the City of Chula Vista, and the California Coastal Commission.

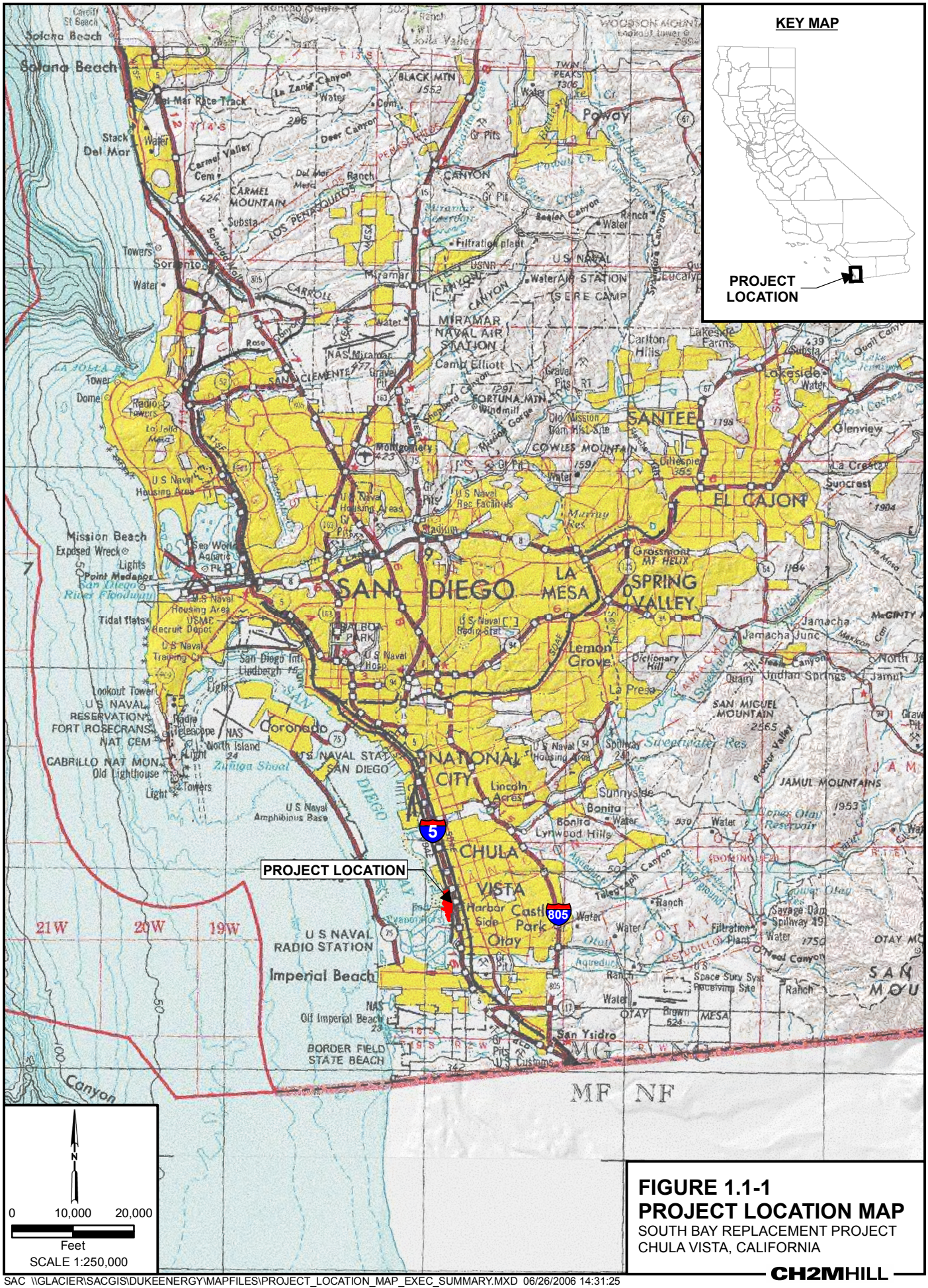

FIGURE 1.1-1
PROJECT LOCATION MAP
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

CH2MHILL

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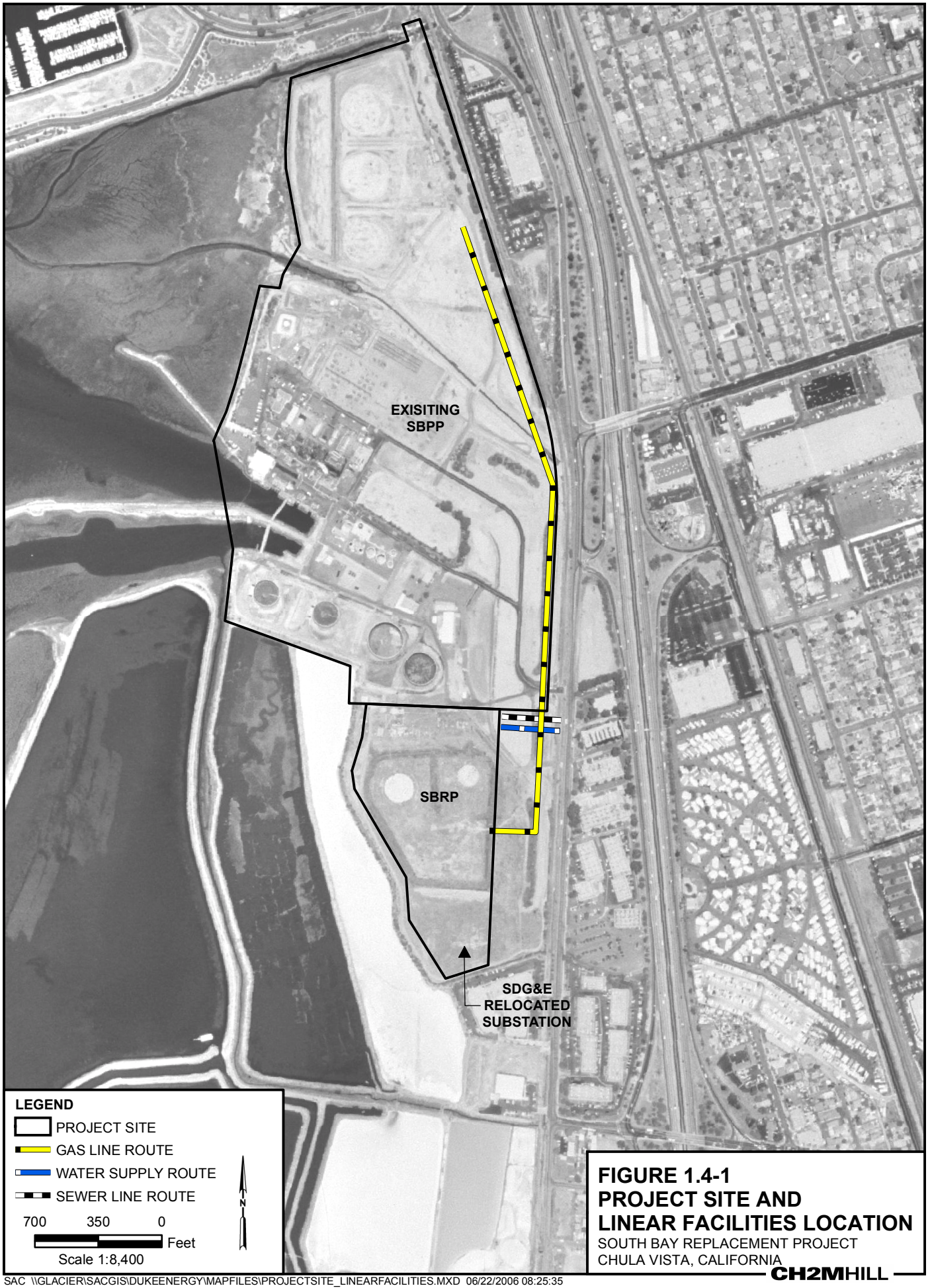

FIGURE 1.4-1
PROJECT SITE AND
LINEAR FACILITIES LOCATION
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

CH2MHILL

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FIGURE 1.4-2
APPEARANCE OF SITE BEFORE CONSTRUCTION
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

CH2MHILL

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FIGURE 1.4-3
APPEARANCE OF SITE AFTER CONSTRUCTION
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

CH2MHILL

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DESCRIPTION	2006						2007						2008						2009						2010						2011						2012					
	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D	J-F	M-A	M-J	J-A	S-O	N-D
PERMITTING																																										
SUBMIT AFC			▲																																							
PERMIT REVIEW AND ISSUE			—	—			—	—	—	—	—	▲																															
MAJOR EQUIPMENT PROCUREMENT								B			A								D																								
EPC CONTRACT, SOUTH BAY ENERGY FACILITY										B		AL	AF																													
ENGINEERING												—	—	—	—	—	—	—																									
PROCUREMENT, MULTIPLE CONTRACTS (Note 1)												A	—	—	A				D	—	D																						
SITE PREPARATION AND CONSTRUCTION													—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—													
INITIAL 230 KV SUBSTATION & TRANSMISSION LINES																																										
ENGINEERING													—	—	—	—	—	—																									
PROCUREMENT															—	—	—	—	—	—	—																						
CONSTRUCTION AND COMMISSIONING																		—	—	—	—	—	—	—																			
FUEL GAS PIPELINE																																											
ENGINEERING AND PROCUREMENT														—	—	—	—	—	—	—	—	—	—	D																			
PERMITTING																			—	—	—	—	—	—																			
CONSTRUCT AND START-UP																			B			A	—	—	—	—	—	—													
PLANT START-UP, TESTING & COMMERCIAL OPERATION																						—	—	—	—	—	—	▲													
DEMOLISH EXISTING SOUTH BAY																											—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FINAL 69 & 138 KV SUBSTATIONS & TRANSMISSION LINES																																										
ENGINEERING																															—	—	—	—	—	—						
PROCUREMENT																																	—	—	—	—	—	—				
CONSTRUCTION AND COMMISSIONING																																					—	—	—	—	—	—

Note 1- Includes Dry Condenser, Electrical Gear & All Other Equipment and Materials

NO	DATE	REVISIONS & RECORD OF ISSUE	BY	CHK
C	June 13, 06	AFC SUBMITTAL	CJS	
B	June 9, 06	PRELIMINARY AFC SUBMITTAL	CJS	
A	June 8, 06	PRELIMINARY 2010 COMMERCIAL OPER	CJS	

LEGEND:

B- BID
A- AWARD
D- DELIVER TO SITE
S- SHIP
AL - LIMITED AWARD
AF - FULL AWARD

LS POWER SOUTH BAY REPLACEMENT PROJECT

SUMMARY MILESTONE SCHEDUL E

00000-F-1001 Revision C

BLACK &VEATCH CORPORATION

FIGURE 1.6-1
PROJECT SCHEDULE
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

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